
International Standard



4805

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Laboratory glassware — Thermo-alcoholometers and alcohol-thermohydrometers

Verrerie de laboratoire — Alcoomètres et aréomètres pour alcool avec thermomètre incorporé

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Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 4805 was developed by Technical Committee ISO/TC 48, *Laboratory glassware and related apparatus*, and was circulated to the member bodies in September 1979.

It has been approved by the member bodies of the following countries :

Australia	Hungary	Poland
Brazil	Italy	Romania
Canada	Korea, Rep. of	South Africa, Rep. of
France	Libyan Arab Jamahiriya	Spain
Germany, F. R.	Netherlands	USSR

No member body expressed disapproval of the document.

Laboratory glassware — Thermo-alcoholometers and alcohol-thermohydrometers

0 Introduction

ISO 4801 specifies alcoholometers and alcohol-hydrometers without an incorporated thermometer. In many countries, however, instruments with an incorporated thermometer are in use. The present International Standard specifies requirements for such instruments.

1 Scope and field of application

This International Standard specifies alcoholometers incorporating a thermometer (thermo-alcoholometers) and alcohol-thermohydrometers, suitable for general alcoholometric purposes.

The details specified are, as far as alcoholometer and hydrometer specifications are concerned, in conformity with ISO 387.

NOTE — The scale of alcoholometers is adjusted to allow direct readings of alcohol contents of alcohol-water mixtures. The scale of alcohol-hydrometers is graduated in density units (for example kg/m^3), and their nominal range is particularly adapted to the requirements of alcoholometry.

2 References

ISO 386, *Liquid-in-glass laboratory thermometers — Principles of design, construction and use.*

ISO 387, *Hydrometers — Principles of construction and adjustment.*

3 General requirements

3.1 Definitions

3.1.1 Alcohol

The term "alcohol" shall, in this International Standard, be understood as ethyl alcohol (ethanol, $\text{C}_2\text{H}_5\text{OH}$).

3.1.2 alcohol content by mass of a mixture of water and alcohol : The ratio of the mass of alcohol present in the mixture to the total mass of the mixture.

The alcohol content by mass is expressed as the number of parts of alcohol per hundred parts of the mixture. The relevant symbol is "% mass".

NOTE — In ISO 78/2 and ISO 4801, the symbol "% (m/m)" is used. In the interest of alignment with the relevant OIML-Recommendation, however, preference should be given to the use of "% mass".

3.1.3 alcohol concentration by volume of a mixture of water and alcohol : The ratio of the volume of pure alcohol present in the mixture at 20 °C to the total volume of the mixture at the same temperature.

The alcohol concentration by volume is expressed as the number of volumes of alcohol per hundred volumes of the mixture. The relevant symbol is "% vol".

NOTE — In ISO 78/2 and ISO 4801, the symbol "% (V/V)" is used (see note in 3.1.2).

3.2 Density

The density of an alcohol-water mixture, where applicable, shall be expressed in kilograms per cubic metre.

3.3 Reference temperature

The reference temperature shall be 20 °C.

3.4 Construction

3.4.1 General requirements

Alcoholometers and alcohol-hydrometers shall meet the requirements of ISO 387.

3.4.1.1 Alcoholometers and alcohol-hydrometers shall be constructed of glass of suitable chemical and thermal properties, shall be as free as possible from visible defects and shall be reasonably free from internal stress.

The coefficient of cubical thermal expansion of the glass shall be $(25 \pm 2) \times 10^{-6} \text{ }^\circ\text{C}^{-1}$.

3.4.1.2 The loading material shall be such that after the finished instrument has been kept in a horizontal position for